

FORMATION OF WINTER STRATUS; DEPTH OF NORTHEAST WIND.

ALEXANDRIA BAY, N. Y.,
February 20, 1917.

DEAR SIR:

(1) As you will have observed from the weather maps, the long-continued cold weather that has prevailed during the past several weeks, accompanied by snowstorms of short duration but great frequency, causing more and deeper snow than "the oldest inhabitants" can boast of, it is needless for me to write at any length on this subject; but I thought it might be of interest to say that during this wintry period the absence of any well-defined cloud form has been remarkable. I have not observed any true cirrus, cirro-cumulus, or alto-cumulus, and rarely any strato-cumulus. All cloudy periods came on by a gradual thickening of the blue sky into a milky sheet, causing the sun to shine with a pale light, and even when the snow fell in seemingly large amounts the sun could usually be seen shining feebly. On a few occasions I could trace out a cirrus streamer, but it was ill-defined and soon lost its form, taking on a uniform milky haze.

(2) I might add that the Northern Lights, which were so brilliant in the Fall, completely failed us, until a few evenings ago a faint arch appeared.

(3) The cold northeasterly winds which we get in front of advancing lows must be very [thin] sheets of air, i. e., extend to but a short distance above the earth, for on several occasions we have had rain with the temperature but a few degrees above 0°F.

Yours, very truly,

DOUGLAS MANNING.

Dr. W. R. Blair, in charge of aerological investigations, makes the following comments:

The cloud formation described in paragraph (1) above is not an unusual winter type. The thin layer of stratus begins forming at a considerable altitude and apparently thickens by continuing to form at lower and lower levels. Measurements on the height of the base of this layer, by means of kites, indicate that the interval from the time when the first cloud formation is visible (usually in a white sky) until the layer is 2 or 3 kilometers thick, amounts to but a few hours.

Our upper-air observations indicate that the cold northeasterly wind mentioned in paragraph (3) does not often exceed 1 kilometer in depth.

551.513 (82)

ATMOSPHERIC CIRCULATION AND THE WEATHER IN ARGENTINA.¹

By H. HELM CLAYTON, Chief, Department of Weather Forecasts.

[Dated: Argentine Meteorological Office, Buenos Aires.]

Argentina lies between the tropical high-pressure belt and the low-pressure belt of the Antarctic Circle. As a result of this pressure distribution and the rotation of the earth the general air movement is from the northwest. The principal seasonal change in pressure distribution is in the interior between the northern boundary and latitude 35° S., where a relatively low pressure in Summer (December to January) is replaced by a relatively high pressure in Winter (June to August), probably as a result of the heating and cooling of the continent. The seasonal change in pressure brings about a marked increase in the frequency of rain-bearing NE. to SE. winds in Summer and an increase in the drier offshore winds in Winter.

Besides the annual changes there are the well-known diurnal changes in pressure and winds. The observations show the maximum pressure central over the arid regions of western Argentina at night, and the minimum over the same region during the day. The winds at Córdoba and at Buenos Aires show clearly the influence of the daily pressure wave.

In addition to the more or less permanent arrangement of pressure and wind belts around the earth, and the annual and daily changes, there are the moving cyclones and anticyclones, of which 10 types, 4 of high pressure and 6 of low pressure, have been recognized in Argentina. The anticyclones usually appear in the southwest and move northeastward. They appear to be the result of masses of cold air which break off from the polar region and progress northward toward the equator, but at the same time they are carried eastward by the general drift of the atmosphere. When the movement of the centers is unusual, they are frequently found associated with changes in the prevailing atmospheric drift. The anticyclones show a tendency to linger about latitudes 30° to 35° S.

The movements of the cyclones are much more erratic than those of the anticyclones. In Winter and Spring they are apt to linger in the vicinity of the Paraná, which is a region of moisture and comparative warmth in Winter. In Summer the cyclones linger over the hot arid plains between Mendoza and Santiago. The movements of the cyclones seem to be controlled chiefly by two factors: (1) The upper drift, which may be determined roughly by the general trend of the sealevel isotherms, because temperature is the main factor in determining upper air pressures; and (2) the sealevel pressure over large areas, which determines the general drift of the lower air. Cyclones are frequently observed moving around large anticyclones in the same direction as the circulating wind.

The motions of the atmosphere are not all explained by daily and annual changes and the passage of cyclones. There are changes occupying days, weeks, months, or years the nature of which is not entirely clear. These changes may be analyzed into waves of different lengths of which the shorter progress more rapidly. Not only do the different waves progress with different speeds, but also in different directions; also they vary in amplitude as they progress, and waves of the same period change their direction of motion from day to day. However, it has been possible to analyze them roughly, to select predominating conditions, and to base useful forecasts on the results.

551.5 (048) (82)

THE ARGENTINE METEOROLOGICAL SERVICE.¹

[ABSTRACT by WM. G. REED.]

The establishment of the Argentine meteorological service—which was due to the initiative of Dr. B. A. Gould, founder of the astronomical observatory at Córdoba—was effected by a law approved toward the end of 1872. The central office was installed in the observatory at Córdoba, but the two institutions were entirely independent, except for having a director in common. During Gould's administration 52 stations were established, at 23 of which observations were made for more than three years; but so many of the observers lost interest that, at the time of his retirement in 1884, there were only 17 active stations, although the service was established on a permanent basis. Four volumes of observations and discussions had been published; isothermal maps had been made, the essentials of which have scarcely been altered by more recent data; and rainfall data for Argentina and surrounding regions had been collected.

¹ Abstract, by W. G. Reed, of the chapter under this title in: *Servicio meteorológico argentina, Historia y organización, con un resumen de los resultados.* Buenos Aires, 1914. pp. 146-163, and charts.

¹ República Argentina, Ministerio de Agricultura, *Servicio meteorológico argentina Historia y organización, con un resumen de los resultados.* Preparado bajo la dirección de Gualterio G. Davis, Jefe del servicio. 181p. 69pl. Buenos Aires, 1914 [in Spanish and English].